UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

June 30, 2004

NMFS Tracking No.: 2004/00419

Larry Dawson
U.S. Department of Agriculture
Clearwater National Forest
12730 Highway 12
Orofino, Idaho 83544-9333

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Lolo Creek Suction Dredging 2004 and 2005, Lolo Creek, 1706030325, Clearwater and Idaho Counties, Idaho

Dear Mr. Dawson:

Enclosed is a document containing a biological opinion (Opinion) prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act (ESA) on the effects of the proposed Lolo Creek Suction Dredging Project for 2004 and 2005, Lolo Creek, 1706030325, Clearwater and Idaho Counties, Idaho. In this Opinion, NOAA Fisheries concludes that the proposed action is not likely to jeopardize the continued existence of ESA-listed Snake River steelhead. As required by section 7 of the ESA, NOAA Fisheries includes reasonable and prudent measures with nondiscretionary terms and conditions that NOAA Fisheries believes are necessary to minimize the impact of incidental take associated with this action.

This document contains a consultation on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and its implementing regulations (50 CFR Part 600). NOAA Fisheries concludes that the proposed action may adversely affect designated EFH for chinook salmon and coho salmon. As required by section 305(b)(4)(A) of the MSA, included are conservation recommendations that NOAA Fisheries believes will avoid, minimize, mitigate, or otherwise offset adverse effects on EFH resulting from the proposed action. As described in the enclosed consultation, 305(b)(4)(B) of the MSA requires that a Federal action agency must provide a detailed response in writing within 30 days of receiving an EFH conservation recommendation.

If you have any questions regarding this letter, please contact Mr. Bob Ries or Mr. Dale Brege of my staff in the Idaho State Habitat Office, North Idaho Branch at (208) 983-3859.

Sincerely,

Russell M Strach for

D. Robert Lohn
Regional Administrator

cc: J. Foss - USFWS
M. Benker - IDFG
I. Jones - NPT
P. Murphy - CNF

Endangered Species Act Section 7 Consultation Biological Opinion
and
Magnuson-Stevens Act
Essential Fish Habitat Consultation

for

Lolo Creek Suction Dredging 2004 and 2005
Snake River Steelhead
Lolo Creek
1706030325
Clearwater and Idaho Counties, Idaho

Agency: U.S. Forest Service, Clearwater National Forest

Consultation Conducted By: NOAA's National Marine Fisheries Service (NOAA Fisheries), Northwest Region (NWR)

Date Issued: 06/30/2004

Issued By: Russell M Strach for
D. Robert Lohn
Regional Administrator

NMFS Tracking No.: 2004/00419

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1. INTRODUCTION

The Endangered Species Act (ESA) of 1973 (16 USC 1531-1544), as amended, establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat on which they depend. Section 7(a)(2) of the ESA requires Federal agencies to consult with NOAA's National Marine Fisheries Service (NOAA Fisheries) and U.S. Fish and Wildlife Service (together "Services"), as appropriate, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their designated critical habitats. This biological opinion (Opinion) is the product of an interagency consultation pursuant to section 7(a)(2) of the ESA and implementing regulations 50 CFR 402.

The analysis also fulfills the Essential Fish Habitat (EFH) requirements under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries management plan. Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (section 305(b)(2)).

The Clearwater National Forest (CNF) proposes to allow permits to be issued by the Idaho Department of Water Resources (IDWR) for recreational suction dredge mining to extract gold from Lolo Creek. The CNF is proposing the action according to its authority under the Organic Act of 1897, Multiple-Use Sustained Yield Act of 1960, and National Forest Management Act of 1976. The administrative record for this consultation is on file at the Idaho State Habitat Office.

1.1 Background and Consultation History

The proposed recreational mining activities are similar to activities that occurred in Lolo Creek in 2001 and which were proposed but not carried out in 2003. In the past, the CNF has worked cooperatively with the dredge miners to select specific locations and operating procedures that allow the dredges to operate with minimal disturbance of fish habitat. Field reviews of mining activities in Lolo Creek were attended by dredge operators, representatives of the CNF, U.S. Fish and Wildlife Service (USFWS), NOAA Fisheries, Nez Perce Tribe (Tribe), and IDWR on June 12, 2001 (prior to dredging) and on August 30, 2001 (after dredging). The first field review was conducted to discuss how operations would occur and what measures might be necessary to prevent or reduce potential unwanted effects. The second field review evaluated the effects of mining to determine if any changes were needed in the operating procedures to avoid unwanted effects in the future. The reviewers (including NOAA Fisheries and USFWS) observed that the dredge mining had little physical effect on the stream channel beyond the immediate areas where gravels were either dredged or deposited and no additional operating procedures were recommended.

A draft 2001 mining season biological assessment (BA) was updated in 2002 to reflect the findings from the 2001 field reviews. However no mining was authorized by the CNF in 2002 due to the pending need to complete an environmental impact statement (EIS). NOAA Fisheries issued an Opinion on July 27, 2003, but the CNF did not authorize any mining due to the pending EIS. On April 14, 2004, the CNF sent NOAA Fisheries a revised BA and requested formal consultation for the mining seasons of 2004 and 2005. The CNF determined that the Lolo Creek Suction Dredging Project was a "may affect, likely to adversely affect" Snake River steelhead. The CNF also determined that the effects to EFH for chinook salmon and coho salmon would be the same as those for steelhead.

The Lolo Creek recreational suction dredging activities proposed by the CNF would likely affect tribal trust resources. Because the suction dredging activities are likely to affect tribal trust resources, NOAA Fisheries contacted the Tribe pursuant to the Secretarial Order (June 5, 1997). For the 2003 Opinion, copies of the draft Opinion were electronically sent to the Tribe's legal counsel (R. Eichstaedt) on September 26, 2002, February 10, 2003, and March 10, 2003. NOAA Fisheries did not receive any official comments from the Tribe as a result of these electronic correspondences. In addition, NOAA Fisheries (D. Brege and B. Ries) met with the Tribe (B. Hills and H. McRoberts) on April 1, 2003, at the Tribe's Fisheries Complex near their tribal headquarters in Lapwai, Idaho. Although the Tribe did not express specific concerns about the NOAA Fisheries analysis of effects in the draft Opinion, the Tribe did express their objection to dredge mining in Lolo Creek since the mining occurs in the same drainage where they are trying to reestablish chinook salmon. Specific tribal comments at this meeting focused on the need for additional project monitoring. Subsequently, NOAA Fisheries contacted the CNF (P. Murphy) and negotiated additional monitoring to be incorporated into the 2003 Opinion.

For consultation on the 2004/2005 proposal, NOAA Fisheries again sent the Tribe (S. Althouse) an electronic draft copy of the Opinion on May 11, 2004. The monitoring requested by the Tribe for the 2003 Opinion was also incorporated into this Opinion. Although the Tribe did not specifically send comments to NOAA Fisheries about the present Opinion, the Tribe did send a letter dated May 12, 2004, to the CNF addressing tribal concerns about the CNF suction dredge draft environmental impact statement.

This Opinion is valid for the 2004 and 2005 mining seasons, provided that the proposed actions are consistent with the details in the BA and the terms and conditions of this Opinion. The number of claims in the area is not expected to change, nor are the IDWR regulations pertaining to recreational suction dredging.

1.2 Description of the Proposed Action

Proposed actions are defined in the Services' consultation regulations (50 CFR 402.02) as "all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas." Additionally, U.S. Code (16 U.S.C.

1855(b)(2)) further defines a Federal action as “any action authorized, funded, or undertaken or proposed to be authorized, funded, or undertaken by a Federal agency.” Because approval of the sites by the CNF would enable the State of Idaho to issue stream channel alteration permits to the operators, which may affect listed resources, CNF must consult under ESA section 7(a)(2) and MSA section 305(b)(2).

The CNF has received 18 proposals to suction dredge in Lolo Creek for 2004 and 2005. Additionally, some applicants may also choose to pan or use small sluice boxes within the action area. A number of mitigation measures were incorporated into the project proposal to reduce project effects on fish habitat. They include: (1) A work window of July 1 through August 15 to avoid steelhead emergence (usually completed by July 1) and chinook salmon spawning (usually occurs in late August), (2) dredge locations be located no closer than 50 feet of a redd to reduce disturbance effects, (3) a requirement that any dredge holes be filled to reduce the likelihood of scour, (4) fuel containment, refueling, and storage requirements, (5) erosion control measures to minimize sediment and turbidity, and (6) monitoring to oversee critical portions of project implementation.

Proposed recreational suction dredging activities consist of operating suction dredges with nozzles ranging from 1.5 to 5 inches in diameter and engines with 15 horsepower or less. Individual dredges would be operated three to five hours per day, four days per week, in areas ranging in size from 24 to 3100 square feet (Table 1). Suction dredges would be used to excavate streambed materials down to bedrock where heavier gold particles may be deposited. Excavated materials are sucked into the dredge nozzle, passed through a sluice box attached to the back of the dredge, and then redeposited in the stream. A suction dredge motor is generally only operated for a short duration on a given day because the technique requires operators to sort through the materials that pass through the dredge, which is time consuming. Dredge sites are typically located in areas where the depth to bedrock is relatively shallow (usually less than 6 feet), so as to minimize the amount of material that needs to be excavated before reaching gold-bearing deposits. The better areas for locating gold are generally not the best salmonid habitat. For example, miners prefer to dredge in the upstream end of pools, in seams and pockets of exposed bedrock, and sometimes on the inside of river bends where the current begins to slow and heavier materials accumulate.

1.3 Description of the Action Area

An action area is defined by the Services’ regulations (50 CFR Part 402) as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.” The action area for this recreational suction dredging proposal consists of the mainstem of Lolo Creek, from its confluence with Utah Creek (T35N, R6E, S32), upstream to Belle Creek (T36N, R6E, S24). The action area encompasses all dredge mining sites (approximately 27,500 square feet), and the downstream extent of stream reaches that might be affected by sediment and/or turbidity created by the dredge operations (approximately 5,500 linear feet). The specific locations of the claims are displayed on maps in the BA. The fifth field hydrologic unit code (HUC) encompassing the action area is 1706030325. This area serves as spawning and rearing habitat for the salmonid Evolutionarily Significant Unit (ESU) listed in Table 2. The action area is also designated EFH for chinook and coho salmon.

Table 1. Lolo Creek Recreational Suction Dredging Proposal. Values shown are estimates of excavation areas, based on the number of operating days and the estimated dredge capacity for a five hour workday.

OPERATOR	NOZZLE SIZE	MAX. DAYS OPERATING	MAX. LENGTH OF DISTURBANCE	MAX. AREA OF DISTURBANCE	DAYS CNF TO MONITOR
Aldernman, Alan	5"	46 days	518 ft.	3108 sq. ft.	23
Barteaux, Bill & Sheila	2.5 or 5"	46 days	518 ft.	3108 sq. ft.	23
Brown, Fred	2, 3, or 5"	14 days	158 ft.	948 sq. ft.	7
Bunch, Gordon	5"	7 days	79 ft.	474 sq. ft.	4
Cahala, James	2.5 or 5"	10 days	113 ft.	678 sq. ft.	5
Calkins, Daniel Calkins, Gary Crooks, Mike	5"	46 days	518 ft.	3108 sq. ft.	23
Dallman, Ted	sluice box	14 days	8 ft.	24 sq. ft.	7
GPAA (1)	2.5 or 5"	10 days	113 ft.	678 sq. ft.	5
GPAA (2)	2.5 or 5"	10 days	113 ft.	678 sq. ft.	5
GPAA (3)	2.5 or 5"	10 days	113 ft.	678 sq. ft.	5
Haley, Ken Happ, Robert	4"	15 days	113 ft.	678 sq. ft.	8
Hopkins, Elwood	2.5 or 5"	10 days	113 ft.	678 sq. ft.	5
Lengachers, Ron & Ellen	2.5 or 5"	30 days	338 ft.	2028 sq. ft.	15
Montgomery, Richard	2.5 or 5"	46 days	518 ft.	3108 sq. ft.	23
O'Conner, L.R.	2.5 or 5"	10 days	113 ft.	678 sq. ft.	5
Patterson, Jack & Cora Du Pont, Del	2.5 or 5"	46 days	518 ft.	3108 sq. ft.	23
Reynolds, Dennis & Marla	2.5 or 5"	46 days	518 ft.	3108 sq. ft.	23
West, Mike	4"	14 days	105 ft.	630 sq. ft.	7

2. ENDANGERED SPECIES ACT

The objective of this Opinion is to determine whether the Lolo Creek Suction Dredging Project is likely to jeopardize the continued existence of the Snake River steelhead.

2.1 Evaluating the Effects of the Proposed Action

The standards for determining jeopardy and destruction or adverse modification of critical habitat are set forth in section 7(a)(2) of the ESA. In conducting analyses of habitat-altering actions under section 7 of the ESA, NOAA Fisheries uses the following steps of the consultation regulations: (1) Consider the biological requirements and status of the listed species; (2) evaluate the relevance of the environmental baseline in the action area to the species' current status; (3) determine the effects of the proposed or continuing action on the species, and whether the action is consistent with any available recovery strategy; and (4) determine whether the species can be expected to survive with an adequate potential for recovery under the effects of the proposed or continuing action, the effects of the environmental baseline, and any cumulative effects, and considering measures for survival and recovery specific to other life stages. In completing this step of the analysis, NOAA Fisheries determines whether the action under consultation, together with all cumulative effects when added to the environmental baseline, is likely to jeopardize the ESA-listed species or result in the destruction or adverse modification of critical habitat[1]. If jeopardy or adverse modification are found, NOAA Fisheries may identify reasonable and prudent alternatives for the action that avoid jeopardy and/or destruction or adverse modification of critical habitat.

The fourth step above (jeopardy/adverse modification analysis) requires a two-part analysis. The first part focuses on the action area and defines the proposed action's effects in terms of the species' biological requirements in that area. The second part focuses on the species itself. It describes the action's effects on individual fish, populations, or both, and places that impact in the context of the ESU as a whole. Ultimately, the analysis seeks to determine whether the proposed action is likely to jeopardize a listed species' continued existence or destroy or adversely modify its critical habitat.

2.1.1 Biological Requirements

The first step NOAA Fisheries uses when applying ESA section 7(a)(2) to the listed ESUs considered in this Opinion includes defining the species' biological requirements within the action area. Biological requirements are population characteristics necessary for the listed ESUs to survive and recover to naturally reproducing population sizes at which time protection under the ESA would become unnecessary. The listed species' biological requirements may be

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[1] Critical habitat is not currently designated for steelhead; therefore, NOAA Fisheries does not make a determination about critical habitat in this Opinion.

described as characteristics of the habitat, population or both (McElhany *et al.* 2000). Interim recovery numbers for Snake River steelhead in the mainstem Clearwater River are 4,900 adult spawners (NMFS 2002). NOAA Fisheries uses lambda (λ) to represent the long-term population growth rate. In order to attain interim recovery numbers, lambda must be greater than one, indicating an increasing population. The habitat features of listed steelhead that the proposed action may affect include substrate, water quality, water velocity, cover/shelter, food (juvenile only), riparian vegetation, and space.

Table 2. References for additional background on listing status, critical habitat designation, protective regulations, and life history for the ESA-listed species considered in this consultation.

Species ESU	Status	Critical Habitat Designation	Protective Regulations	Life History
Snake River Steelhead (*Oncorhynchus mykiss*)	Threatened; August 18, 1997; 62 FR 43937	Under review May 7, 2002	July 10, 2000; 65 FR 42422	Busby *et al.* 1996; Nickelson *et al.* 1992

2.1.2 Status and Generalized Life History of Snake River Steelhead

In this step, NOAA Fisheries also considers the current status of the listed species within the action area, taking into account population size, trends, distribution, and genetic diversity. To assess the current status of the listed species, NOAA Fisheries starts with the determinations made in its decision to list the species and also considers any new data that are relevant to the species' status. A discussion of listed steelhead general life history is provided in NMFS (2001), available on the NOAA Fisheries website *(http://www.nwr.noaa.gov/1habcon/habweb/habguide/appendix_b.pdf)*).

The CNF found that the Lolo Creek Suction Dredging Project is likely to adversely affect Snake River steelhead. Based on life history timing of this ESU, it is likely that juvenile steelhead, and possibly incubating eggs or alevins, would be affected by the proposed dredging activities.

Columbia River salmon and steelhead populations have experienced a long-term decline in numbers since the 1870s (NRC 1996). Population declines have been caused by a variety of factors, including fishing, hydropower development, and habitat that has been degraded or lost through agriculture, ranching, mining, timber harvest and urbanization (NRC 1996). Pre-development estimates of Columbia River salmon and steelhead range from 7.5 million (Chapman 1986) to 16 million fish (NPPC 1986). Run sizes for adult chinook salmon and steelhead in the Columbia River, estimated from annual counts at the Bonneville Dam from 1998-2003, average around 603,075 and 358,698, respectively, and are primarily composed of hatchery-origin fish (USACE 2004). Unusually large numbers of adult fish have been observed passing through Snake River dams since 2000. These large returns are thought to be largely a result of cyclic oceanic and climatic conditions favorable to anadromous fish (Marmorek and

Peters 1998). It has not yet been determined if the recent population increases represent a shift in the population growth rates (due to a corresponding shift in climatic conditions), or if the change is a temporary phenomenon. Factors, other than ocean conditions, such as downstream passage conditions for smolts, predation, fishing pressure, and habitat conditions in rearing areas also vary from year to year, and may offset gains from favorable ocean conditions in some years, or work synergistically in others.

The Snake River steelhead ESU, listed as threatened on August 18, 1997 (62 FR 43937), includes all natural-origin populations of steelhead in the Snake River basin of southeast Washington, northeast Oregon, and Idaho. None of the hatchery stocks in the Snake River basin are listed, but several are included in the ESU.

Steelhead spend 1 to 4 years in the ocean before returning to fresh water to spawn. Adult Snake River steelhead return to mainstem rivers from late summer through fall, where they feed for several months before moving upstream into smaller tributaries. The majority of fish disperse into tributaries from March through May, depending on the elevation. Spawning begins shortly after fish reach spawning areas, which is typically during a rising hydrograph and prior to peak flows (Thurow 1987). Steelhead typically select spawning areas at the downstream end of pools, in gravels ranging in size from approximately 0.5 to 4.5 inches in diameter (Pauley *et al.* 1986). Juveniles emerge from redds in 4 to 8 weeks, depending on temperature. After emergence, fry have poor swimming ability. They move into shallow, low velocity areas in side channels and along channel margins to escape high velocities and predators (Everest and Chapman 1972), and progressively move toward deeper water as they grow in size (Bjornn and Rieser 1991). Juveniles typically remain in freshwater for 2 or 3 years, or longer, depending on temperature and growth rate (Mullan *et al.* 1992). Smolts migrate downstream during spring runoff, which occurs from April to mid-June in the Snake River basin.

Counts of wild and hatchery-origin steelhead returning to the Snake River basin declined sharply in the early 1970s, increased modestly from the mid-1970s through the 1980s, and declined again during the 1990s (NPPC 2003). The longest consistent indicator of steelhead abundance in the Snake River basin is derived from counts of natural-origin steelhead at the uppermost dam on the lower Snake River. According to these estimates, the abundance of natural-origin summer steelhead at Lower Granite Dam declined from a 4-year average of 58,300 in 1964 to a 4-year average of 8,300, ending in 1998. The most recent 4-year average of wild fish (2000-2003) is 42,706 adults (USACE 2004). Parr densities in natural production areas have been substantially below estimated capacity (Hall-Griswold and Petrosky 1996). Adult returns at Lower Granite Dam dramatically increased since 2000; however, the increase is due primarily to hatchery returns, with wild fish comprising only 22% of the adult returns in that time (USACE 2004).

The long-term population growth rate, λ, was used by McClure *et al.* (2003) to indicate whether listed populations are increasing in numbers ($\lambda > 1$) or decreasing ($\lambda < 1$). From the years 1965-2000, the estimated growth rate for the Snake River steelhead ESU as a whole is 0.96, assuming no reproduction by hatchery fish (McClure *et al.* 2003). A population with a growth rate of 0.96 would shrink by 50% in 17 years. The growth rate for Snake River "A-run" steelhead is 0.97, and 0.93 for “B-run” steelhead. “A-run” and “B-run” fish are distinguished by differences in size, run timing, and length of ocean residence. “B-run” fish are larger, reside longer in the ocean, and occupy a distinct range. The differences in the two fish stocks represent an important component of phenotypic and genotypic diversity of the Snake River Basin steelhead ESU. A four percent increase in the growth rate for the Snake River steelhead ESU as a whole is needed to prevent extinction; however, an increase in the population growth rate of seven percent is needed to sustain “B-run” steelhead (McClure *et al.* 2003).

2.1.3 Environmental Baseline in the Action Area

The environmental baseline is defined as: "the past and present impacts of all Federal, state, or private actions and other human activities in the action area, including the anticipated impacts of all proposed Federal projects in the action area that have undergone section 7 consultation and the impacts of state and private actions that are contemporaneous with the consultation in progress" (50 CFR 402.02). In step 2, NOAA Fisheries evaluates the relevance of the environmental baseline in the action area to the species' current status. In describing the environmental baseline, NOAA Fisheries evaluates essential features of designated critical habitat and the listed Pacific salmon ESUs affected by the proposed action.

In general, the environment for listed species in the Columbia River Basin (CRB), including those that migrate past or spawn upstream from the action area, has been dramatically affected by the development and operation of the Federal Columbia River Power System (FCRPS). Storage dams have eliminated mainstem spawning and rearing habitat, and have altered the natural flow regime of the Snake and Columbia Rivers, decreasing spring and summer flows, increasing fall and winter flow, and altering natural thermal patterns. Power operations cause fluctuations in flow levels and river elevations, affecting fish movement through reservoirs, disturbing riparian areas, and possibly stranding fish in shallow areas as flows recede. The eight dams in the migration corridor of the Snake and Columbia Rivers kill or injure a portion of the smolts passing through the area. The low velocity movement of water through the reservoirs behind the dams slows the smolts' journey to the ocean and enhances the survival of predatory fish (Independent Scientific Group 1996; NRC 1996). Formerly complex mainstem habitats in the Columbia and Snake Rivers have been reduced, for the most part, to single channels, with floodplains reduced in size, and off-channel habitats eliminated or disconnected from the main channel (Sedell and Froggatt 1984; Independent Scientific Group 1996; and Coutant 1999). The amount of large woody debris in these rivers has declined, reducing habitat complexity and altering the rivers' food webs (Maser and Sedell 1994).

Other human activities that have degraded aquatic habitats or affected native fish populations in the CRB include stream channelization, elimination of wetlands, construction of flood control dams and levees, construction of roads (many with impassable culverts), timber harvest, splash dams, mining, water withdrawals, unscreened water diversions, agriculture, livestock grazing, urbanization, outdoor recreation, fire exclusion/suppression, artificial fish propagation, fish harvest, and introduction of non-native species (Henjum *et al.* 1994; Rhodes *et al.* 1994; NRC

1996; Spence *et al.* 1996; and Lee *et al.* 1997). In many watersheds, land management and development activities have: (1) Reduced connectivity (i.e., the flow of energy, organisms, and materials) between streams, riparian areas, floodplains, and uplands; (2) elevated fine sediment yields, degrading spawning and rearing habitat; (3) reduced large woody material that traps sediment, stabilizes streambanks, and helps form pools; (4) reduced vegetative canopy that minimizes solar heating of streams; (5) caused streams to become straighter, wider, and shallower, thereby reducing rearing habitat and increasing water temperature fluctuations; (6) altered peak flow volume and timing, leading to channel changes and potentially altering fish migration behavior; and (7) altered floodplain function, water tables and base flows (Henjum *et al.* 1994; McIntosh *et al.* 1994; Rhodes *et al.* 1994; Wissmar *et al.* 1994; NRC 1996; Spence *et al.* 1996; and Lee *et al.* 1997).

Habitat conditions in Lolo Creek tributary watersheds vary from high to low quality, with highest quality generally on Federal lands with low road densities, and lowest quality on private lands at lower elevations where the lands are developed for numerous human uses. Stream conditions in Lolo Creek have been altered by farming, grazing, logging, and road building (USFS 1997). The CNF cited a survey of Browns Creek, a tributary of Musselshell Creek mostly on private lands, that showed the entire watershed had been either heavily grazed by cattle or logged intensively. Farming impacts occur on private lands in lower portions of the drainage, and logging, grazing, and roads are the dominant impacts in the upper portions of the drainage. Road densities range from 0.0 to 9.8 miles per square mile and average 4.8 miles per square mile on CNF lands in the Lolo Creek drainage. Timber harvest and road building have led to a modeled seven percent increase in peak runoff in the Lolo Creek watershed (Jones 1999).

As stated within the BA, the matrix indicators in the Lolo Creek drainage for water temperature, fish passage, road density, cobble embeddedness, percent fines, large woody debris, and pool quality were rated as “not properly functioning.” Sediment yield, stream bank stability, pool frequency, off-channel habitat, and habitat refugia were rated as “functioning at risk.” Fuller *et al.* (1984) report that problems in the lower reaches of Lolo Creek include annual stream flow variations, high summer stream temperatures, high levels of siltation, and the lack of instream cover. High sediment levels in the Lolo Creek drainage were attributed to roads, past timber harvest, and mining. Moderate to high levels of cobble embeddedness indicate reduced quality and quantity of summer and winter rearing habitat, and may be a limiting factor to fish production. Low levels of woody debris and sub-optimal levels of instream cover are limiting factors in a number of stream reaches (USFS 1997).

The BA for the proposed action stated that the Lolo Creek steelhead population is a combination of natural and hatchery-influenced fish, and that Lolo Creek produces very few steelhead due to poor adult returns and degraded habitat conditions from historic stream channel alterations. Steelhead spawning occurs in the mainstem of Lolo Creek, from Musselshell Creek to Yoosa Creek, and also in tributaries in the upper Lolo Creek and Yoosa Creek drainages. Limited spawning may also occur in the Musselshell Creek and Eldorado Creek drainages, based on observations of juvenile steelhead in those areas. Juvenile steelhead rearing and spawning have also been documented in the upper mainstem of Lolo Creek, although the number of redds observed has been relatively low. Clearwater BioStudies, Inc. (1988) reported 88 steelhead redds in Lolo Creek during their July 1988 stream survey. The report noted that redds were found upstream of Musselshell Creek and downstream of Yoosa Creek. Most of these redds were associated with enhancement structures or side channels.

Pacific salmon populations also are substantially affected by variation in the freshwater and marine environments. Ocean conditions are a key factor in the productivity of Pacific salmon populations. Stochastic events in freshwater (flooding, drought, snowpack conditions, volcanic eruptions, etc.) can play an important role in a species' survival and recovery, but those effects tend to be localized compared to the effects associated with the ocean. The survival and recovery of these species depends on their ability to persist through periods of low natural survival due to ocean conditions, climatic conditions, and other conditions outside the action area. Freshwater survival is particularly important during these periods because enough smolts must be produced so that a sufficient number of adults can survive to complete their oceanic migration, return to spawn, and perpetuate the species. Therefore it is important to maintain or restore properly functioning condition (PFC) in order to sustain the ESU through these periods. Additional details about the importance of freshwater survival to Pacific salmon populations can be found in Federal Caucus (2000), NMFS (2000), and Oregon Progress Board (2000).

The biological requirements of listed Snake River steelhead are not met under the environmental baseline; however, fish habitat conditions in Lolo Creek have been improving in the past 20 years, as a result of restoration efforts that began in the late 1970s, and are continuing today. Improvements in environmental baseline conditions in the action area would have to continue in order to meet those biological requirements not presently met. Any further degradation or impairment in the improvement of these conditions might increase the amount of risk the listed Snake River steelhead ESU presently faces under the environmental baseline.

2.2 Analysis of Effects

Effects of the action are defined as: "the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with the action, that will be added to the environmental baseline" (50 CFR 402.02). Direct effects occur at the project site and may extend upstream or downstream based on the potential for impairing the value of habitat for meeting the species' biological requirements or impairing the essential features of critical habitat. Indirect effects are defined in 50 CFR 402.02 as "those that are caused by the proposed action and are later in time, but still are reasonably certain to occur." They include the effects on listed species or critical habitat of future activities that are induced by the proposed action and that occur after the action is completed. "Interrelated actions are those that are part of a larger action and depend on the larger action for their justification" (50 CFR 403.02). "Interdependent actions are those that have no independent utility apart from the action under consideration" (50 CFR 402.02).

In step 3 of the jeopardy and adverse modification analysis, NOAA Fisheries evaluates the effects of proposed actions on listed species and seeks to answer the question of whether the species can be expected to survive with an adequate potential for recovery. In watersheds where critical habitat has been designated, NOAA Fisheries must make a separate determination of whether the action will result in the destruction or adverse modification of critical habitat (ESA, section 3(3) and section 3(5A)).

2.2.1 Habitat Effects

The Lolo Creek Suction Dredging Project BA provides an analysis of the effects of the proposed action on Snake River steelhead and their habitat. The analysis in this Opinion uses the matrix of pathways and indicators (MPI) and procedures in NMFS (1996), the information in the BA, and the best scientific and commercial data available to evaluate elements of the proposed action that have the potential to affect the listed fish or their habitat.

The proposed recreational suction dredge mining activities are restricted by State of Idaho permit conditions that limit potential effects of the activity. Potential effects are limited by restrictions imposed on nozzle and engine size, limitations of small-sized equipment, designation of potential dredging sites by the CNF to avoid sensitive areas, and CNF oversight and monitoring. Recreational dredging is focused on specific sites (from 25 to 3100 square feet per site in the proposed action) identified by CNF as not used for spawning[2]. Suitable substrate for spawning or known spawning areas are in some instances near the proposed dredging sites; however, the sites were located specifically to avoid disturbing redds in the possible redd locations.

The proposed action includes operating procedures and precautionary measures that greatly reduce potential adverse effects and the likelihood of take, but neither adverse habitat effects, nor take can be discounted. Young-of-the-year steelhead are likely to be present in areas where dredging occurs, due to the proximity of spawning areas. The BA indicates that the majority of steelhead spawning in the mainstem of Lolo Creek occurs mainly between Musselshell and Yoosa Creeks, in the vicinity of mining claims. There is a chance that the action will result in take of eggs from disturbance of redds, or entrainment of fry. Take from disturbing a redd by a suction dredge is possible but unlikely to occur since dredge locations would be 50 feet or more from spawning areas and dredging would not begin until most steelhead have emerged from redds.

The work window is timed to begin after most steelhead emerge from the substrate, and cease before most chinook salmon begin spawning in late August. However, steelhead could emerge after July 1, particularly in late runoff years with cooler temperatures, when emergence could be delayed by up to 2 weeks (E. Schriever, Idaho Department of Fish and Game, pers. comm.). Based on the timing of spawning, stream temperatures in Lolo Creek, and the accumulated

[2] Spawning surveys were conducted annually by the CNF and the NPT between 1987 and 2002 for chinook salmon. Steelhead spawning surveys were conducted sporadically in the 1990s, conditions permitting.

thermal units (ATUs) required for steelhead development, steelhead emergence from gravels in Lolo Creek would usually occur before July 1. The ATUs are a measure of cumulative heat, calculated as the sum of daily average water temperatures, in degrees Celsius, over a period of time. The ATUs reported for steelhead emergence range from roughly 550 (used at the Dworshak National Fish Hatchery) to 600 (Alaska Department of Fish and Game). Steelhead spawning occurs as temperatures reach a range of 3.9 to 9.4°C (Bell 1986). If spawning in Lolo Creek occurs no later than April 30, and the average stream temperature is 5°C (approximately 41°F) or higher during incubation, using the midpoint of reported ATUs required for emergence (575 ATUs), steelhead would emerge on July 5. With observed peak spawning around April 15, or slightly sooner (C. Johnson, Bureau of Land Management, pers. comm.), and average stream temperatures during incubation that are generally warmer than 5°C, most hatching and emergence should occur before July 1, the opening date of mining operations.

The proposed dredging activities are expected to have little impact on adult steelhead or the suitability of spawning gravels, since spawning occurs 5-6 months later during spring flows that naturally redistribute substrate. Movements of juvenile steelhead through the dredge areas could be delayed by several hours until instream activities cease, particularly on occasions when multiple dredges are operating nearby at the same time. Juvenile steelhead rearing in the vicinity of the suction dredging would likely be displaced while dredges are operating. However, juvenile steelhead could be attracted to the outfall from suction dredges if benthic invertebrates are dislodged and passed through the dredge. If this were to occur, the likelihood of entrainment is not likely to increase, since juveniles would congregate on the downstream side of the outfall, which is too far from suction nozzle for fish to become entrained.

The proposed dredging is expected to adversely affect juvenile steelhead. Direct mortality of juvenile chinook salmon or steelhead could occur from entrainment of juveniles into the dredge. Griffith and Andrews (1981) observed high mortality of rainbow trout eggs and fry that were intentionally passed through a suction dredge, but juvenile and adult rainbow and brook trout all survived. Mortality of invertebrates was also low (< 1%). Although mortality could occur with fry or eggs, entrainment of eggs or fry is unlikely since the dredge season occurs after all or most of the eggs hatch, even in cooler years with later emergence. Additionally, dredges are generally operated in environments where the stream energy is too high for steelhead fry or parr (which seek to conserve energy in slower water), and the substrate is too coarse for redds. The 50-foot operating distance from spawning areas reduces the likelihood of killing or injuring newly-emerged fry. Juveniles that have passed the fry stage are capable of maintaining a sufficient distance from the dredge nozzle suction such that they will not be entrained. In past experience with recreational suction dredging in Lolo Creek, there have been no reported incidents of juvenile steelhead or salmon being sucked into a dredge nozzle. In summary, few, if any, listed fish are expected to be directly killed or injured by the dredge.

Suction dredging may affect salmonid food availability. Localized reductions in invertebrate populations were observed by Harvey *et al.* (1982) in comparisons of control and dredge areas; however, the differences did not occur at all locations. One year after dredging, Harvey *et al.* (1982) reported there was virtually no evidence that dredging had occurred at one study site, and substrate changes were eliminated at the other site. Somer and Hassler (1992) monitored density and composition of benthic invertebrates, and physical stream characteristics, above and below dredge sites in a northern California stream. They found qualitative differences in invertebrate species above and below the dredging, but no significant differences in numbers of invertebrates or diversity indices. Given the relatively small area where dredging would occur in the proposed action, it does not appear that food availability would appreciably change as a result of dredging.

Suction dredging may affect salmonid spawning areas by loosening fine particles that could become deposited in redds, or by creating unstable gravel deposits that attract adult salmonids to construct redds in areas more likely than natural substrate to wash out at high flows. Harvey and Lisle (1999) compared scour of chinook salmon redds before and after high winter flows in natural substrates and on dredge tailings, and found that redds located in tailings were subject to a higher rate of scouring than redds located in undisturbed areas. Steelhead redds could be affected similarly; however, steelhead redds located in dredge tailings would be less likely to scour since steelhead typically spawn after several high-flow events and scouring has already occurred. Another mitigating factor is the amount of area affected by dredging. The total surface area disturbed by the proposed mining is small, in comparison to the available spawning areas in the vicinity of the dredge operations. The likelihood of spawning on dredge tailings may be inversely related to the availability of natural spawning gravels in the vicinity. Lolo Creek has ample spawning gravels in the area (although sedimentation is high); therefore, there is a low probability that steelhead would select dredge tailings for a redd site. In Lolo Creek, miners are required under the IDWR permit to avoid operating in natural spawning areas such as gravel bar areas at pool tailouts. The CNF will identify such areas and make them known to the operators during the preseason field review. In addition, miners must disperse dredge tailings and refill holes so as to not create artificial spawning areas. In the study by Harvey and Lisle (1999), the greatest amount of scour occurred at a site where the dredge hole was around 2 feet below the surface elevation, and the spoils were piled around 2 feet above the surface elevation. The site with the least amount of scour had no discernable hole or pile left from the dredge operation. This observation indicates that refilling dredge holes might reduce the likelihood of scour. Given the small area disturbed by dredging and the requirement to fill the dredge holes, the likelihood that scour of steelhead redds would be induced by suction dredging is greatly reduced.

The CNF expects both turbidity and suspended sediment to increase during suction dredge operations, but such increases are expected to be virtually undetectable 25 feet downstream, based on their observations of past dredge operations under the existing guidelines. Increased turbidity is expected to be brief (only while the dredge engine is operating). The Idaho Department of Environmental Quality (IDEQ) measured turbidity downstream of same-sized recreational dredges operating in a similar stream channel as the motor was running, and found that even when measured immediately behind the sluice outlet, turbidity did not exceed the state acute standard of 50 NTUs (Nephelometric Turbidity Units) (D. Stewart, IDEQ, pers. comm.). According to Waters (1995), brief low levels of elevated turbidity comparable to the IDEQ data is likely to have little or no measurable effect on primary production, invertebrates, or fish.

Sediment can become excessive if a suction dredge is operated in silt deposits. However, suction dredges are usually operated in areas with coarse particles, where high density, ore-bearing deposits are typically found. Consequently, particles typically suspended by suction dredges tend to settle rapidly, and sediment plumes typically do not extend much beyond the sluice outlet. Somer and Hassler (1992) observed increased deposition of sediment and organic material in sediment traps downstream from dredge activities 125 and 350 feet below dredge sites, 4-6 weeks after dredging occurred. Thomas (1985) found that suspended sediment concentrations returned to background levels 35 feet downstream from the dredge. Harvey *et al.* (1982) reported a similar finding; and IDEQ observations were also comparable (D. Stewart, pers. comm.).

Harvey and Lisle (1998) reviewed dredging literature and stated that most effects on stream ecosystems are not well understood, but concluded that the effects of habitat alteration could be minor, localized, and brief, or may go as far as to harm population viability, depending on each particular stream system. Excavation and deposition of dredge materials can result in localized changes in stream depth and size composition of surface materials, movement or redistribution of large particles or woody material, and destruction of streambanks. Subsurface cover in pools from protruding wood and boulders may be temporarily increased or decreased at a dredge site, depending on local circumstances. Changes in cover, however, typically persist only until the next high flow event fills dredge holes and redistributes dredge deposits. Somer and Hassler (1992) monitored dredge holes and sediment deposition from suction dredging and found that high flows redistributed bedload, filled dredge holes, and flushed sediment from the dredge sites. Based on similar observations of past suction dredging effects in the Clearwater River drainage, physical effects of recreational dredging are usually not discernable after the spring runoff, unless the streambank, large rocks, or logs are disturbed. Such disturbances are prohibited by conditions listed within the IDWR permits on CNF lands, and therefore, are not expected to occur. At the Lolo Creek suction dredging sites, past CNF monitoring has not shown these potential impacts to be significant effects.

Harvey and Lisle (1998) also stated that examination of dredging impacts should include other activities, such as camping. Dredge operators often camp in riparian areas, and sites are often utilized for extended time periods, with the resulting potential for waste disposal problems, loss of riparian vegetation, and other site damage. Based on observations from past years, the CNF has noted some disturbances, but they appear to be minor and localized. Impacts should be controllable through CNF site monitoring and vegetation replanting, if necessary.

2.2.2 Species Effects

The effect that a proposed action has on particular habitat features or MPI pathways may be translated into a likely effect on population growth rate. In the case of this consultation, it is not possible to quantify an incremental change in survival for Snake River steelhead.

While population growth rates have been calculated at the large ESU scale, changes to the environmental baseline from the proposed action were described only within the action area. An action that improves habitat in a watershed, and thus helps meet essential habitat feature requirements, may therefore increase lambda for Snake River steelhead.

As noted above in the discussion of habitat effects, the instream suction dredging activities are likely to have some negative impacts on steelhead. Newly hatched juvenile steelhead or eggs could be killed or injured by entrainment in the dredge, or by spring scour of redds located in relatively unstable gravel deposits left by the previous summer's dredging. It is expected that fingerling and adult fish will be able to swim out of the work areas as disturbances begin.

Increased turbidity from instream work could also have detrimental effects on salmonids. Rather than remain in actively dredged areas, juvenile salmonids are more likely to emigrate to another section of river, which could increase competition for food and cover. The CNF anticipates only short-term effects, such as displacement of juvenile steelhead and limited mortality, due to the relatively small section of Lolo Creek involved.

Based on the effects described above, the proposed action will have a slight negative effect on the survival and recovery of Snake River steelhead. The production capacity of steelhead is expected to be maintained as a result of the proposed action. The value of lambda for the Snake River steelhead population is not expected to change significantly as a result of this project.

2.2.3 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." Other activities within the watershed have the potential to impact fish and habitat within the action area. Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being reviewed through separate ESA section 7 consultations. Past Federal actions have already been added to the environmental baseline in the action area.

State, tribal, and local government actions will likely be in the form of legislation, administrative rules, or policy initiatives. Government and private actions may encompass changes in land and water uses including ownership and intensity any of which could adversely affect listed species or their habitat. Government actions are subject to political, legislative, and fiscal uncertainties.

Changes in the economy have occurred in the last 15 years, and are likely to continue, with less large-scale resource extraction, more targeted extraction, and significant growth in other economic sectors. Growth in new businesses, primarily in the technology sector, is creating urbanization pressures and increased demands for buildable land, electricity, water supplies, waste-disposal sites, and other infrastructure.

Economic diversification has contributed to population growth and movement, and this trend is likely to continue. Such population trends will result in greater overall and localized demands for electricity, water, and buildable land in the action area; will affect water quality directly and indirectly; and will increase the need for transportation, communication, and other infrastructure. The impacts associated with these economic and population demands will probably affect habitat features such as water quality and quantity, which are important to the survival and recovery of the listed species. The overall effect will likely be negative, unless carefully planned for and mitigated.

The action area is mostly managed by the CNF, except for several square miles of private lands within the Lolo Creek drainage above the confluence with Jim Brown Creek, and non-Federal road systems in the vicinity. Consequently, potential cumulative effects are limited by the small portion of non-Federal lands. The primary use of non-Federal lands in the action area is cattle grazing and, secondarily, commercial timber production. Both uses have occurred on private and State of Idaho lands in the drainage, and are expected to continue. Cattle grazing has deleterious effects on riparian vegetation and streambank stability, and may contribute cumulatively to any sediment produced by habitat alterations from suction dredging. However, the additive effects of the proposed activity and future non-Federal activities are considered negligible since increases in sediment or turbidity from the proposed activity is expected to be localized, of short duration, and separated by sufficient distance from future non-Federal activities so that the effects remain largely independent.

The IDEQ will establish total maximum daily loads (TMDLs) in the Snake River basin, a program regarded as having positive water quality effects. The TMDLs are required by court order, so it is reasonably certain that they will be set. The State of Idaho has created an Office of Species Conservation to work on subbasin planning and to coordinate the efforts of all state offices addressing natural resource issues. Demands for Idaho's groundwater resources have caused groundwater levels to drop and reduced flow in springs for which there are senior water rights. The IDWR has begun studies and promulgated rules that address water right conflicts and demands on a limited resource. The studies have identified aquifer recharge as a mitigation measure with the potential to affect the quantity of water in certain streams, particularly those essential to listed species.

2.2.4 Consistency with Listed Species ESA Recovery Strategies

Recovery is defined by NOAA Fisheries' regulations (50 CFR 402) as an "improvement in the status of listed species to the point at which listing is no longer appropriate under the criteria set out in section 4 (a)(1) of the Act." Recovery planning is underway for listed Pacific salmon in the Northwest with technical recovery teams identified for each domain. Recovery planning will help identify measures to conserve listed species and increase the survival of each life stage. NOAA Fisheries also intends that recovery planning identify the areas/stocks most critical to species conservation and recovery and thereby evaluate proposed actions on the basis of their effects on those areas/stocks.

Until the species-specific recovery plans are developed, the FCRPS Opinion and the related December 2000 *Memorandum of Understanding Among Federal Agencies Concerning the Conservation of Threatened and Endangered Fish Species in the Columbia River Basin* (together these are referred to as the Basinwide Salmon Recovery Strategy) provides the best guidance for judging the significance of an individual action relative to the species-level biological requirements. In the absence of completed recovery plans, NOAA Fisheries strives to ascribe the appropriate significance to actions to the extent available information allows. Where information is not available on the recovery needs of the species, either through recovery planning or otherwise, NOAA Fisheries applies a conservative substitute.

The CNF has habitat protection and restoration commitments to uphold under the Basinwide Salmon Recovery Strategy. For Federal lands, PACFISH and land management plans define these commitments. The proposed action is consistent with the Basinwide Salmon Recovery Strategy by keeping short-term sediment production to a minimum and by maintaining channel characteristics suitable for fish habitat.

2.3 Conclusions

After reviewing the current status of the Snake River steelhead, the environmental baseline for the action area, the effects of the proposed actions, and cumulative effects in the action area, it is NOAA Fisheries' opinion that the Lolo Creek Suction Dredging Project is not likely to jeopardize the continued existence of Snake River steelhead.

While the action involves riparian and instream activities, NOAA Fisheries expects project measures to be effective in avoiding or minimizing effects on steelhead. The key measures to protect steelhead are the July 1 to August 15 work window, CNF monitoring of the suction dredge activities, surveys of all project sites for locations of steelhead redds and avoidance of those redds by at least 50 feet, fuel containment and storage controls, inspections of equipment for leaks, erosion control measures to minimize sediment and turbidity, and a fisheries biologist to oversee critical portions of project implementation.

2.4 Conservation Recommendations

Conservation recommendations are defined as "discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information" (50 CFR 402.02). Section 7 (a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. The conservation recommendation listed below is consistent with these obligations, and therefore should be implemented by the CNF.

1. The CNF should close all non-Forest Service roads and trails that lead to inactive mining claims to reduce watershed road density and improve habitat conditions in the MPI.

In order for NOAA Fisheries to be kept informed of actions minimizing or avoiding adverse effects, or those that benefit listed species or critical habitat, NOAA Fisheries requests notification of the achievement of any conservation recommendations when the CNF submits its monitoring report describing action under this Opinion or when the project is completed.

2.5 Reinitiation of Consultation

As provided in 50 CFR 402.16, reinitiation of formal consultation is required if: (1) The amount or extent of taking specified in the Incidental Take Statement is exceeded, or is expected to be exceeded; (2) new information reveals effects of the action may affect listed species in a way not previously considered; (3) the action is modified in a way that causes an effect on listed species that was not previously considered; or (4) a new species is listed or critical habitat is designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease, pending conclusion of the reinitiated consultation.

2.6 Incidental Take Statement

The ESA at section 9 (16 USC 1538) prohibits take of endangered species. The prohibition of take is extended to threatened anadromous salmonids by the section 4(d) rule (50 CFR 223.203). Take is defined by the statute as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct (16 USC 1532(19)). Harm is defined by regulation as an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavior patterns, including, breeding, spawning, rearing, migrating, feeding, or sheltering (50 CFR 222.102). Harass is defined as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering (50 CFR 17.3). Incidental take is defined as takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant (50 CFR 402.02). The ESA at section 7(o)(2) removes the prohibition from any incidental taking that is in compliance with the Terms and Conditions specified in a section 7(b)(4) Incidental Take Statement (16 USC 1536).

An Incidental Take Statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth Terms and Conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

2.6.1 Amount or Extent of Take

The proposed action is reasonably certain to result in incidental take of the listed species. NOAA Fisheries is reasonably certain the incidental take described here will occur because: (1) Snake River steelhead are known to occur in the action area; and (2) the proposed action is likely to cause impacts to habitat significant enough to impair feeding, breeding, migrating, or sheltering for the listed species. Despite the use of the best scientific and commercial data available, NOAA Fisheries cannot quantify a specific amount of incidental take of individual fish or incubating eggs for the action as whole. However, for one source of take, entrainment of fish in suction dredges, NOAA Fisheries anticipates no more than one incident per operator (18 recreational suction dredge applications), where a single juvenile steelhead or small group of juvenile steelhead is entrained by the suction dredge. That incidental take from entrainment is anticipated and authorized only in the amount that it does not exceed 20 juvenile fish total for all operators combined.

In addition, take is anticipated from exposure of juvenile steelhead to turbidity directly downstream from the suction dredging activities. NOAA Fisheries cannot quantify this take, which is likely sublethal, as noted in the analysis of effects (section 2.2.1, above). In lieu of an amount of take, NOAA Fisheries identifies the extent of take. The extent of take is the section of mainstem Lolo Creek from the Belle Creek to Utah Creek confluences at the specific recreational dredging sites identified by CNF, and for a distance of 35 feet below those activity sites, where turbidity is anticipated. Take of adult fish is not authorized as they should be easily avoided by the dredge operators. If the proposed action results in any additional take, the CNF would need to reinitiate consultation. The authorized take includes only take caused by the proposed action within the action area as defined in this Opinion.

2.6.2 Reasonable and Prudent Measures

Reasonable and Prudent Measures (RPMs) are non-discretionary measures to minimize take, that may or may not already be part of the description of the proposed action. They must be implemented as binding conditions for the exemption in section 7(o)(2) to apply. The CNF has the continuing duty to regulate the activities covered in this Incidental Take Statement. If the CNF fails to require the applicants to adhere to the Terms and Conditions of the Incidental Take Statement through enforceable terms that are added to the permit or grant document, or fails to retain the oversight to ensure compliance with these Terms and Conditions, the protective coverage of section 7(o)(2) may lapse. NOAA Fisheries believes that activities carried out in a manner consistent with these RPMs, except those otherwise identified, will not necessitate further site-specific consultation. Activities which do not comply with all relevant RPMs will require further consultation.

NOAA Fisheries believes that the following RPMs are necessary and appropriate to minimize take of listed fish resulting from implementation of the action.

The CNF shall:

1. Monitor the effects of the proposed action to determine the actual project effects on listed fish. Monitoring should detect adverse effects of the proposed action, assess the actual levels of incidental take in comparison with anticipated incidental take documented in the Opinion, and detect circumstances where the level of incidental take is exceeded.

2. Minimize the impact of incidental take from entrainment of eggs, fry, or parr.

3. Minimize the impact of incidental take from fuel spills.

4. Minimize the impact of incidental take from habitat alteration.

5. Minimize the impact of incidental take by ensuring the scope and effects determination for the proposed 2004 and 2005 suction dredge operations are consistent with the BA.

2.6.3 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, the action must be implemented in compliance with the following Terms and Conditions, which implement the RPMs described above for each category of activity. These Terms and Conditions are non-discretionary.

1. To implement Reasonable and Prudent Measure 1 (monitoring), the CNF shall:

   a. Visit each recreational dredge site at least five times between July 1 and August 15, or more often if problems occur, to monitor dredge activity and effects of the mining on fish and fish habitat.

   b. Provide NOAA Fisheries with an annual monitoring report describing operator compliance with suction dredging rules, the amount of stream area mined at each site, a photo of the mined area, and details about streambank vegetation disturbance and revegetation (if any). Submit the annual monitoring report by November 30, for the previous mining season, to:
   NOAA Fisheries, 102 N. College, Grangeville, Idaho 83530.

   c. Obtain a plan of operation from the suction dredge operators before the dredge mining begins that specifies the location, approximate amount of surface area they plan to dredge, and likely dates of operation. The operating plan would be used to establish channel monitoring sites, and is not intended to constrain the timing and location of dredge operation.

d. Monitor potential changes in channel morphology as a result of mining, through the following activities at the mining site, and in the pool/riffle sequences immediately upstream and downstream from the mined area, before and after mining: (1) Wolman pebble counts; (2) channel cross-sections; (3) one longitudinal profile; and (4) pictures showing the location of gross features such as large woody debris, boulders, bank condition. At a minimum, sampling sites shall include one control site not affected by dredging, and sites representing the range of disturbance, such as one "small" area, one "medium" area, and one "large" area of disturbance.

e. Obtain from the suction dredge operators, at the end of the season, a description of the actual location(s), surface areas dredged, and number of days of operation.

f. Provide NOAA Fisheries an update of pre-season monitoring progress no later than June 15, and for post-season monitoring progress, no later than September 15.

2. To implement Reasonable and Prudent Measure 2 (eggs, fry, and parr), the CNF shall:

   a. Require operators to conduct all suction dredge activities below the ordinary high water line between July 1 and August 15.

   b. Require operators to conduct all dredge mining 50 feet or more from spawning areas.

   c. Require operators to disperse all dredge piles and back-fill all dredge holes by the end of the operating season (August 15).

   d. Require operators to immediately cease operations if eggs are excavated or if dead or injured steelhead are observed, and contact the CNF. The CNF shall contact NOAA Fisheries before resuming activities.

   e. Require all Terms and Conditions be included in any permit, grant, or contract issued for the implementation of the action described in this Opinion.

   f. Require that if a sick, injured, or dead specimen of a threatened or endangered species is found as a result of the proposed action, the finder must notify the Vancouver Field Office of NOAA Fisheries Law Enforcement at (360) 418-4246. The finder must take care in handling sick or injured specimens to ensure effective treatment, and in handling dead specimens to preserve biological material in the best possible condition for later analysis of cause of death. The finder also has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not disturbed unnecessarily.

3. To implement Reasonable and Prudent Measure 3 (fuel spills), the CNF shall require operators to anchor the suction dredge to the stream bank when refueling in the water (so that fuel does not need to be carried out into the stream); transfer no more than 1 gallon of fuel at a time (unless the dredge has a detachable fuel tank); and place absorbent material, such as a towel, under the fuel tank to catch any spillage resulting from refueling operations.

4. To implement Reasonable and Prudent Measure 4 (habitat alteration), the CNF shall:

    a. Require operators to not undercut banks or widen the channel.

    b. Require operators to not undermine, excavate, or remove any woody debris or rocks that extend from the bank into the channel.

    c. Revegetate camping areas, paths, and other disturbed sites located along streambanks associated with dredge operations at the end of the season.

5. To implement Reasonable and Prudent Measure 5 (consistency with the BA), the CNF shall review all suction dredging applications for Lolo Creek for 2004 and 2005 prior to issuing any permits. The CNF shall determine if the extent and effects of the action are consistent with the BA, and if not, the CNF must reinitiate consultation immediately.

3. MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

3.1 Statutory Requirements

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries management plan.

Pursuant to the MSA:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (section 305(b)(2)).

- NOAA Fisheries must provide conservation recommendations for any Federal or state action that may adversely affect EFH (section 305(b)(4)(A)).

- Federal agencies must provide a detailed response in writing to NOAA Fisheries within 30 days after receiving EFH conservation recommendations. The response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with NOAA

Fisheries EFH conservation recommendations, the Federal agency must explain its reasons for not following the recommendations (section 305(b)(4)(B)).

The EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA section 3). For the purpose of interpreting this definition of EFH: Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 CFR 600.10). Adverse effect means any impact which reduces quality and/or quantity of EFH, and may include direct (*e.g.*, contamination or physical disruption), indirect (*e.g.*, loss of prey or reduction in species fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810).

The EFH consultation with NOAA Fisheries is required for any Federal agency action that may adversely affect EFH, including actions that occur outside EFH, such as certain upstream and upslope activities.

The objectives of this EFH consultation are to determine whether the proposed action may adversely affect designated EFH and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects on EFH.

3.2 Identification of EFH

Pursuant to the MSA the Pacific Fishery Management Council (PFMC) has designated EFH for three species of Federally-managed Pacific salmon: chinook (*Oncorhynchus tshawytscha*); coho (*O. kisutch*); and Puget Sound pink salmon (*O. gorbuscha*) (PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC 1999), and longstanding, naturally-impassable barriers (i.e., natural waterfalls in existence for several hundred years). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the Pacific Coast Salmon Plan (PFMC 1999). Assessment of potential adverse effects to these species' EFH from the proposed action is based, in part, on this information.

3.3 Proposed Action

The proposed action and action area are detailed above in Sections 1.2 and 1.3 of this document. The action area includes habitats that have been designated as EFH for various life-history stages of chinook and coho salmon.

3.4 Effects of Proposed Action on EFH

The effects on chinook and coho salmon are similar to those for Snake River steelhead as described in detail in Section 2.2.1 of this document. The proposed action may result in short- and long-term adverse effects on a variety of habitat parameters. These adverse effects are:

1. The potential for increased turbidity if suction dredges are operated in areas high in silt.

2. The potential for dredging sensitive sites such as undercut banks and around habitat structures.

3. The potential for dredge mining spawning gravels, loosening gravels, or not returning gravels to a stable state.

4. The potential to reduce food availability due to disturbance and mortality of macroinvertebrates.

3.5 Conclusion

NOAA Fisheries concludes that the proposed action may adversely affect designated EFH for chinook and coho salmon.

3.6 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations to Federal agencies regarding actions that may adversely affect EFH. NOAA Fisheries understands that the conservation measures described in the BA will be implemented by the CNF, and believes that these measures are sufficient to minimize, to the maximum extent practicable, the following EFH effects: loss of some food items, loss of spawning gravels, and disturbance of sensitive sites. Although, these conservation measures are not sufficient to fully address the remaining adverse effects to EFH, specific Terms and Conditions outlined in Section 2.6.3 are generally applicable to designated EFH for chinook and coho salmon, and do address these adverse effects. Consequently, NOAA Fisheries recommends that the following Terms and Conditions be implemented as EFH conservation measures.

1. Term and Condition 1 (monitoring) and its supporting points will ensure these conservation recommendations are achieving their goal of minimizing the effects to water quality and maintain spawning gravel and spawning locations.

2. Term and Condition 2 (entrainment of eggs, fry, or parr) and its supporting points will ensure these conservation recommendations are achieving their goal of minimizing the direct effects to listed fish and their habitat

3. Term and Condition 3 (fuel spills) ensure these conservation recommendations are achieving their goal of minimizing the effects to water quality, forage, and salmonid habitat.

4. Term and Condition 4 (habitat alteration) and its supporting points ensure these conservation recommendations are achieving their goal of minimizing the effects to forage, habitat, and spawning and rearing areas critical to listed species.

5. Term and Condition 5 (consistency with the BA) ensure these conservation recommendations are achieving their goal of minimizing the effects to habitat, water quality, forage, and spawning areas.

3.7 Statutory Response Requirement

Pursuant to the MSA (section 305(b)(4)(B)) and 50 CFR 600.920(j), Federal agencies are required to provide a detailed written response to NOAA Fisheries' EFH conservation recommendations within 30 days of receipt of these recommendations. The response must include a description of measures proposed to avoid, mitigate, or offset the adverse impacts of the activity on EFH. In the case of a response that is inconsistent with the EFH conservation recommendations, the response must explain the reasons for not following the recommendations, including the scientific justification for any disagreements over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effects.

3.8 Supplemental Consultation

The CNF must reinitiate EFH consultation with NOAA Fisheries if the proposed action is substantially revised in a manner that may adversely affect EFH, or if new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920(l)).

IV. REFERENCES

Bell, M.C. 1986. Fisheries handbook of engineering requirements and biological criteria. Fish Passage Development and Evaluation Program, Corps of Engineers, North Pacific Division, Portland, Oregon.

Bjornn, T.C., and D.W. Reiser. 1991. Habitat requirements of salmonids in streams. Pages 83-138 in: Influences of forest and rangeland management on salmonid fishes and their habitats. Edited by W.R. Meehan. Bethesda, Maryland: American Fisheries Society Special Publication 19:83-138.

Busby, P.J., T.C. Wainwright, G.J. Bryant, L.J. Lierheimer, R.S. Waples, F.W. Waknitz, and I.V. Lagomarsino. 1996. Status Review of West Coast Steelhead from Washington, Idaho, Oregon, and California. NOAA Technical Memorandum NOAA Fisheries-NWFSC-27. August.

Chapman, D.W. 1986. Salmon and steelhead abundance in the Columbia River in the nineteenth century. Transactions of the American Fisheries Society 115:662-670.

Clearwater BioStudies, Inc. 1988. Fish Habitat Characteristics and Salmonid Abundance in the Lolo Creek Study Area during Summer 1988. Final report to USDA Forest Service.

Coutant, C.C. 1999. Perspectives on temperature in the Pacific Northwest's fresh waters. Environmental Sciences Division Publication 4849 (ORNL/TM-1999/44), Oak Ridge National Laboratory. Oak Ridge, Tennessee. 108p.

Everest, F.H., and D.W. Chapman. 1972. Habitat selection and spatial interaction of juvenile chinook salmon and steelhead trout in two Idaho streams. Journal of the Fisheries research Board of Canada 29(1):91-100.

Federal Caucus. 2000. Conservation of Columbia basin fish: final basinwide salmon recovery strategy. <http://www.salmonrecovery.gov> December.

Fuller, R.K., J.H. Johnson, and M.A. Bear. 1984. A Biological and Physical Inventory of the Streams Within the Lower Clearwater River Basin, Idaho. Lapwai, ID: Nez Perce Tribe.

Griffith, J.S., and D.A. Andrews. 1981. Effects of small suction dredge on fishes and aquatic invertebrates in Idaho streams. North American Journal of Fisheries Management 1:21-28.

Hall-Griswold, J.A., and C.E. Petrosky. 1996. Idaho habitat/natural production monitoring: part I - annual report, 1995. Report IDFG 97-4, Idaho Department of Fish and Game, Boise, Idaho.

Harvey, B.C. and T.E. Lisle. 1999. Scour of chinook salmon redds on suction dredge tailings. North American Journal of Fisheries Management 19:613-617.

Harvey, B.C. and T.E. Lisle. 1998. Effects of suction dredging on streams: a review and evaluation strategy. Fisheries 23(8):8-17.

Harvey, B.C., K. McCleneghan, J.D. Linn, and C.L. Langley. 1982. Some physical and biological effects of suction dredge mining. Laboratory Report No. 82-3, California Department of Fish and Game, Environmental Services Branch, Fish and Wildlife Water Pollution Control Laboratory, Rancho Cordova, California.

Henjum, M.G., J.R. Karr, D.L. Bottom, D.A. Perry, J.C. Bednarz, S.G. Wright, S.A. Beckwitt and E. Beckwitt. 1994. Interim protection for late-successional forests, fisheries and watersheds. National Forests east of the Cascade Crest, Oregon and Washington. A Report to the United States Congress and the President. The Wildlife Society. Bethesda, Maryland.

Independent Scientific Group. 1996. Return to the river: restoration of salmonid fishes in the Columbia River ecosystem. Northwest Power Planning Council. Portland, Oregon. 500 p.

Jones, R.M. 1999. Hydrology and water quality report for the Lochsa River subbasin analysis. Clearwater National Forest, Orofino, Idaho.

Lee, D.C., J.R. Sedell, B.E. Rieman, R.F. Thurow, and J.E. Williams. 1997. Broadscale assessment of aquatic species and habitats. Volume III, Chapter 4. USDA Forest Service, General Technical Report PNW-GTR-405. Portland, Oregon.

Marmorek, D.R. and C.N. Peters, editors. 1998. Plan for analyzing and testing hypotheses (PATH): Preliminary decision analysis report on Snake River spring/summer chinook. ESSA Technologies Limited. Vancouver, British Columbia.

Maser, C. and J.R. Sedell. 1994. From the forest to the sea: the ecology of wood in streams, rivers, estuaries, and oceans. St. Lucie Press, Delray Beach, Florida.

McClure, M.B., E.E. Holmes, B.L. Sanderson, and C.E. Jordan. 2003. A large-scale multispecies status assessment: anadromous salmonids in the Columbia River Basin. Ecological Applications 13(4):964-989.

McElhany, P., M. Ruckleshaus, M.J. Ford, T. Wainwright, and E. Bjorkstedt. 2000. Viable salmon populations and the recovery of evolutionarily significant units. U.S. Deptartment of Commererce, NOAA Technical Memorandum NMFS-NWFSC

McIntosh, B.A., J.R. Sedell, J.E. Smith, R.C. Wissmar, S.E. Clarke, G.H. Reeves, and L.A. Brown. 1994. Management history of eastside ecosystems: changes in fish habitat over 50 Years, 1935 to 1992. USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-321. February.

Mullan, J.W., K.R. Williams, G. Rhodus, T.W. Hillman, and J.D. McIntyre. 1992. Production and habitat of salmonids on mid-Columbia River tributary streams. Monograph I. U.S. Department of the Interior. 505p.

Nickelson, T.E., J.W. Nicholas, A.M. McGie, R.B. Lindsay, D.L. Bottom, R.J. Kaiser, and S.E. Jacobs. 1992. Status of anadromous salmonids in Oregon coastal basins. Oregon Department of Fish and Wildlife, Research and Development Section and Ocean Salmon Management. Unpublished. 83 pages.

NMFS (National Marine Fisheries Service). 2002. Interim Abundance and productivity targets for Interior Columbia salmon and steelhead listed under the Endangered Species Act. April 4, 2002, letter to the Northwest Power Planning Council, National Marine Fisheries Service, Seattle Washington.

NMFS. 2001. Appendix A: biological requirements, current status, and trends: 12 Columbia River basin evolutionarily significant units. <http://www.nwr.noaa.gov/1habcon/habweb/habguide/bioptemplate_app_a.pdf>.

NMFS. 2000. Biological Opinion -- Reinitiation of Consultation on Operation of the Federal Columbia River Power System, Including the Juvenile Fish Transportation Program, and 19 Bureau of Reclamation Projects in the Columbia Basin. Hydro Program, Portland, Oregon.

NMFS. 1999. The Habitat Approach: Implementation of Section 7 of the Endangered Species Act for Action Affecting the Habitat of Pacific Anadromous Salmonids. NOAA Fisheries, Northwest Region, Habitat ConservationDivision, Portland, Oregon. <http://www.nwr.noaa.gov/1habcon/habweb/pubs/newjeop9.pdf>

NMFS. 1996. Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale. NOAA Fisheries, Environmental and Technical Services Division, Habitat Conservation Branch, 525 NE Oregon Street, Portland, Oregon.

NPPC (Northwest Power Planning Council). 2003. Online data query for adult fish passage records at Lower Granite Dam. Fish Passage Center: <http://www.fpc.org/adult_history/ytd-lgr.htm>

NPPC. 1986. Compilation of information on salmon and steelhead losses in the Columbia River Basin. Northwest Power Planning Council, Portland, Oregon.

NRC (National Research Council). 1996. Upstream - salmon and society in the Pacific Northwest. National Academy Press, Washington, D.C.

Oregon Progress Board. 2000. Oregon State of the Environment Report 2000. Oregon Progress Board, Salem, Oregon.

Pauley, G.B., B.M. Bortz, and M.F. Shepard. 1986. Species profiles: life histories and environmental requirements of coastal fishes and invertebrates (Pacific Northwest) -- steelhead trout. U.S. Fish and Wildlife Service Biological Report 82(11.62). U.S. Army Corps of Engineers, TR EL-82-4. 24p.

PFMC (Pacific Fisheries Management Council). 1999. Amendment 14 to the Pacific Coast Salmon Plan. Appendix A: Description and Identification of Essential Fish Habitat, Adverse Impacts and Recommended Conservation Measures for Salmon. Pacific Fishery Management Council, Portland, Oregon.

Rhodes, J.J., D.A. McCullough, and F.A. Espinosa, Jr. 1994. A coarse screening process for potential application in ESA consultations. Columbia River Intertribal Fish Commission. Prepared under NMFS/BIA Inter-Agency Agreement 40ABNF3. December.

Sedell, J.R., and J.L. Froggatt. 1984. Importance of streamside forests to large rivers: the isolation of the Willamette River, Oregon, USA, from its floodplain by snagging and streamside forest removal. Internationale Vereinigung Fur Theoretische Und Angewandte Limnologie Verhandlungen 22:1828-1834.

Somer, W.L., and T.J. Hassler. 1992. Effects of suction-dredge gold mining on benthic invertebrates in a Northern California stream. North American Journal of Fisheries Management 12:244-252.

Spence, B.C, G.A. Lomnicky, R.M. Hughes, R.P. Novitzki. 1996. An ecosystem approach to salmonid conservation. TR-4501-96-6057. ManTech Environmental Research Services Corporation. Corvallis, Oregon.

Thomas, V.G. 1985. Experimentally determined impacts of a small, suction gold dredge on a Montana stream. North American Journal of Fisheries Management 5:480-488.

Thurow, R. 1987. Evaluation of the South Fork Salmon River steelhead trout fishery restoration program. Lower Snake River Fish and Wildlife Compensation Plan. Job Completion Report, Contract No. 14-16-0001-86505, Idaho Department of Fish and Game, Boise, Idaho.

USACE (U.S. Army Corps of Engineers). 2004. Natural resource management section: fish counts. Portland District, U.S. Army Engineers. <http://www.nwp.usace.army.mil/op/fishdata/

USFS (U.S. Forest Service). 1997. Clearwater subbasin ecosystem analysis at the watershed scale. U.S. Department of Agriculture, U. S. Forest Service, Clearwater National Forest, Orofino, Idaho.

Waters, T.F. (ed.). 1995. Sediment in Streams: Sources, Biological Effects, and Control. American Fisheries Society Monograph 7. Bethesda, Maryland.

Wissmar, R.C., J.E. Smith, B.A. McIntosh, H.W. Li, G.H. Reeves, and J.R. Sedell. 1994. Ecological health of river basins in forested regions of eastern Washington and Oregon. General Technical Report PNW-GTR-326. USDA Forest Service, Pacific Northwest Research Station. Portland, Oregon. 65 p.